LIST OF CURRENT CLAIMS

1. (Currently Amended) Apparatus for predicting bone fracture risk in an osteoporotic patient, ~~which apparatus comprises~~, comprising:

a Dual X-ray Absorptiometry scanner ~~for scanning~~ configured to scan a body area of the patient ~~and producing~~ to thereby produced a Dual X-ray Absorptiometry image of the body ~~area~~ part within said body area;

an image analysis ~~means for analysing pre-determined aspects of~~ module configured to perform shape and texture analysis of the Dual X-ray Absorptiometry image to thereby generate an image data set representative of aspects of the shape of the body part and the structure of bone within the body area~~, the aspects being pre-determined according to the part of the body being scanned, and for generating an image data set from the Dual X-ray Absorptiometry image~~; and

a data comparison ~~means comprising~~ module having a database of comparative data sets from Dual X-ray Absorptiometry images of control subjects, for comparison with the image data set [[for]] generated from the Dual X-ray Absorptiometry image of the patient, to thereby predict the risk of bone fracture in the patient.

2. (Currently Amended) The apparatus ~~Apparatus~~ according to claim 1, wherein the body part is a proximal femur.

3. (Currently Amended) The apparatus ~~Apparatus~~ according to claim 1 ~~or 2 wherein the image analysis means analyses the Dual X-ray Absorptiometry image by analysis of the shape of the body part~~ configured to analyze different body parts.

4. (Currently Amended) The apparatus ~~Apparatus~~ according to claim ~~3 wherein the Dual X-ray Absorptiometry image is analysed using an Active Shape Model~~ 1 configured to analyze more than one of proximal femur, wrist, ankle, hand, and spine.

5. (Currently Amended) Apparatus according to claim ~~4 wherein the data comparison means compares the Active Shape Model data set generated from the Dual X-ray Absorptiometry~~

~~image of the patient with the comparative data sets in the database by examining how the location of landmark points deviates from the mean co-ordinates of the comparative data sets~~ 1, wherein the image analysis module is configured to analyze aspects of the Dual X-ray Absorptiometry image using an Active Shape Model to generate an Active Shape Model data set representative of the shape of the body part.

6. (Currently Amended) Apparatus according to claim ~~1, wherein the image analysis means analyses the Dual X-ray Absorptiometry image by analysis of the texture of the body part~~ 5, wherein the data comparison module is configured to compare the Active Shape Model data set generated from the Dual X-ray Absorptiometry image of the patient with the comparative data sets in the database by examining how the location of landmark points deviates from the mean co-ordinates of the comparative data sets.

7. (Currently Amended) Apparatus according to claim ~~6 wherein the analysis of the texture of the body part uses Fourier transforms and Principal Component Analysis~~ 1, wherein the image analysis module is configured to analyze aspects of the Dual X-ray Absorptiometry image using Fourier transforms and Principal Component Analysis, for generating a texture data set representative of the texture of the body part.

8. (Currently Amended) Apparatus according to claim 7, wherein the Dual X-ray Absorptiometry image is digitised and regions of interest identified in the image, from which a power spectrum is obtained from a Fourier transform of each region of interest, and profiles of each region produced, the Principal Component Analysis generating a data set from each profile, which ~~can~~ is to be compared with the database of comparative data sets.

9. (Currently Amended) Apparatus according to claim 1~~, wherein the image analysis means uses more than one image analysis method~~ is configured to compare i) a value obtained from comparison of the image data set for the Dual X-ray Absorptiometry image of the patient or subject with the database of comparative data sets, with ii) bone mineral density data obtained from the Dual X-ray Absorptiometry image.

10. (Currently Amended) ~~Apparatus according to claim 9 wherein the image analysis means uses both shape and texture analysis~~ An apparatus for measuring the progression of a disorder which affects the shape and/or trabecular structure of bone in a patient, the apparatus comprising:

a Dual X-ray Absorptiometry scanner for scanning a body area of the patient to thereby produce a Dual X-ray Absorptiometry image of a body part within said body area;

an image analysis module configured to perform shape and texture analysis of the Dual X-ray Absorptiometry image to thereby generate an image data set representative of aspects of the shape of the body part and the structure of bone within the body area; and

a data comparison module comprising a database of comparative data sets from Dual X-ray Absorptiometry images of control subjects, for comparison with the image data set generated from the Dual X-ray Absorptiometry image of the patient, to thereby provide a measure of the progression of the disorder in the patient.

11. (Currently Amended) The apparatus ~~Apparatus~~ according to claim 10, wherein the ~~image analysis means uses an Active Shape Model and Fourier transforms and Principal Component Analysis~~ the disorder is osteoarthritis.

12. (Currently Amended) The apparatus ~~Apparatus~~ according to claim ~~1, for predicting fracture risk in different body parts~~ 10, wherein the disorder is Paget's disease.

13. (Currently Amended) The apparatus ~~Apparatus~~ according to claim ~~12 for predicting fracture risk in more than one of the proximal femur, wrist, ankle, hand and spine~~ 10, wherein the body part is a proximal femur.

14. (Currently Amended) ~~Apparatus according to claim 1, which compares i) the fracture risk prediction value obtained from comparison of the image data set for the Dual X-ray Absorptiometry image of the patient with the database of comparative data sets, with ii) bone mineral density data obtained from the Dual X-ray Absorptiometry image~~ The apparatus according to claim 10 configured to analyze different body parts.

15. (Currently Amended) ~~Apparatus according to claim 1, for measuring the progression of a disorder which affects the shape or trabecular structure of bone~~ The apparatus according to claim 10 for analysing more than one of the proximal femur, wrist, ankle, hand and spine.

16. (Currently Amended) ~~Apparatus according to claim 15 for measuring the progression of osteoarthritis or Paget's Disease~~ The apparatus according to claim 10, wherein the image analysis module is configured to analyze aspects of the Dual X-ray Absorptiometry image using an Active Shape Model for generating an Active Shape Model data set representative of the shape of the body part.

17. (Currently Amended) ~~Apparatus according to claim 1, for measuring non-pathological changes in a subject associated with age, gender, body mass index and/or genetics~~ The apparatus according to claim 16, wherein the data comparison module is configured to compare the Active Shape Model data set generated from the Dual X-ray Absorptiometry image of the patient with the comparative data sets in the database by examining how the location of landmark points deviates from the mean co-ordinates of the comparative data sets.

18. (Currently Amended) ~~Apparatus substantially as hereinbefore described~~ The Apparatus according to claim 10, wherein the image analysis module is configured to analyze aspects of the Dual X-ray Absorptiometry image using Fourier transforms and Principal Component Analysis, for generating a texture data set representative of the texture of the body part.

19. (New) The apparatus according to claim 18, wherein the Dual X-ray Absorptiometry image is digitized and regions of interest identified in the image, from which a power spectrum is obtained from a Fourier transform of each region of interest, and profiles of each region produced, the Principal Component Analysis generating a texture data set from each profile, which is to be compared with the database of comparative data sets.

20. (New) The apparatus according to claim 10 configured to compare i) a value obtained from comparison of the image data set for the Dual X-ray Absorptiometry image of the

patient or subject with the database of comparative data sets, with ii) bone mineral density data obtained from the Dual X-ray Absorptiometry image.

21. (New) An apparatus for predicting a risk of osteoarthritis in a patient, the apparatus comprising:

a Dual X-ray Absorptiometry scanner for scanning a body area of the patient to thereby produce a Dual X-ray Absorptiometry image of a body part within said body area;

an image analysis module configured to perform shape and texture analysis of the Dual X-ray Absorptiometry image to thereby generate an image data set representative of aspects of the shape of the body part and the structure of bone within the body area; and

a data comparison module comprising a database of comparative data sets from Dual X-ray Absorptiometry images of control subjects, for comparison with the image data set generated from the Dual X-ray Absorptiometry image of the patient, to thereby predict the risk of osteoarthritis in the patient.

22. (New) The apparatus according to claim 21, wherein the body part is a proximal femur.

23. (New) The apparatus according to claim 21 configured to analyze different body parts.

24. (New) The apparatus according to claim 21 configured to analyze more than one of the proximal femur, wrist, ankle, hand and spine.

25. (New) The apparatus according to claim 21, wherein the image analysis module is configured to analyze aspects of the Dual X-ray Absorptiometry image using an Active Shape Model for generating an Active Shape Model data set representative of the shape of the body part.

26. (New) The apparatus according to claim 25, wherein the data comparison module is configured to compare the Active Shape Model data set generated from the Dual X-ray Absorptiometry image of the patient with the comparative data sets in the database by examining how the location of landmark points deviates from the mean co-ordinates of the comparative data sets.

27. (New) The apparatus according to claim 21, wherein the image analysis module is configured to analyze aspects of the Dual X-ray Absorptiometry image using Fourier transforms and Principal Component Analysis, for generating a texture data set representative of the texture of the body part.

28. (New) The apparatus according to claim 27, wherein the Dual X-ray Absorptiometry image is digitized and regions of interest identified in the image, from which a power spectrum is obtained from a Fourier transform of each region of interest, and profiles of each region produced, the Principal Component Analysis generating a texture data set from each profile, which is to be compared with the database of comparative data sets.

29. (New) The apparatus according to claim 21 configured to compare i) a value obtained from comparison of the image data set for the Dual X-ray Absorptiometry image of the patient or subject with the database of comparative data sets, with ii) bone mineral density data obtained from the Dual X-ray Absorptiometry image.

30. (New) The apparatus for measuring non-pathological changes in a subject associated with age, gender, body mass index and/or genetics, the apparatus comprising:

a Dual X-ray Absorptiometry scanner for scanning a body area of the subject to thereby produce a Dual X-ray Absorptiometry image of a body part within said body area;

an image analysis module configured to perform shape and texture analysis of the Dual X-ray Absorptiometry image to thereby generate an image data set representative of aspects of the shape of the body part and the structure of bone within the body area; and

a data comparison module comprising a database of comparative data sets from Dual X-ray Absorptiometry images of control subjects, for comparison with the image data set generated from the Dual X-ray Absorptiometry image of the subject, to thereby provide a measure of said non-pathological changes.

31. (New) The apparatus according to claim 30, wherein the body part is a proximal femur.

32. (New) The apparatus according to claim 30 configured to analyze different body parts.

33. (New) The apparatus according to claim 30 configure to analyze more than one of the proximal femur, wrist, ankle, hand and spine.

34. (New) The apparatus according to claim 30, wherein the image analysis module is configured to analyze aspects of the Dual X-ray Absorptiometry image using an Active Shape Model for generating an Active Shape Model data set representative of the shape of the body part.

35. (New) The apparatus according to claim 34, wherein the data comparison module is configured to compare the Active Shape Model data set generated from the Dual X-ray Absorptiometry image of the patient with the comparative data sets in the database by examining how the location of landmark points deviates from the mean co-ordinates of the comparative data sets.

36. (New) The apparatus according to claim 30, wherein the image analysis module is configured to analyze aspects of the Dual X-ray Absorptiometry image using Fourier transforms and Principal Component Analysis, for generating a texture data set representative of the texture of the body part.

37. (New) The apparatus according to claim 36, wherein the Dual X-ray Absorptiometry image is digitized and regions of interest identified in the image, from which a power spectrum is obtained from a Fourier transform of each region of interest, and profiles of each region produced, the Principal Component Analysis generating a texture data set from each profile, which is to be compared with the database of comparative data sets.

38. (New) The apparatus according to claim 30 configured to compare i) a value obtained from comparison of the image data set for the Dual X-ray Absorptiometry image of the patient or subject with the database of comparative data sets, with ii) bone mineral density data obtained from the Dual X-ray Absorptiometry image.

39. (New) The apparatus for quantifying deformation of a proximal femur of a patient, the apparatus comprising:

a Dual X-ray Absorptiometry scanner for scanning a body area of the patient to thereby produce a Dual X-ray Absorptiometry image of a body part within said body area;

an image analysis module configured to perform shape and texture analysis of the Dual X-ray Absorptiometry image to thereby generate an image data set representative of aspects of the shape of the body part and the structure of bone within the body area; and

a data comparison module comprising a database of comparative data sets from Dual X-ray Absorptiometry images of control subjects, for comparison with the image data set generated from the Dual X-ray Absorptiometry image of the patient, to thereby quantify deformation of the proximal femur.

40. (New) The apparatus according to claim 39, wherein the image analysis module is configured to analyze aspects of the Dual X-ray Absorptiometry image using an Active Shape Model for generating an Active Shape Model data set representative of the shape of the body part.

41. (New) The apparatus according to claim 40, wherein the data comparison module is configured to compare the Active Shape Model data set generated from the Dual X-ray Absorptiometry image of the patient with the comparative data sets in the database by examining how the location of landmark points deviates from the mean co-ordinates of the comparative data sets.

42. (New) The apparatus according to claim 39, wherein the image analysis module is configured to analyze aspects of the Dual X-ray Absorptiometry image using Fourier transforms and Principal Component Analysis, for generating a texture data set representative of the texture of the body part.

43. (New) The apparatus according to claim 42, wherein the Dual X-ray Absorptiometry image is digitized and regions of interest identified in the image, from which a power spectrum is obtained from a Fourier transform of each region of interest, and profiles of each region produced, the Principal Component Analysis generating a texture data set from each profile, which is to be compared with the database of comparative data sets.

44. (New) The apparatus according to claim 39 configured to compare i) a value obtained from comparison of the image data set for the Dual X-ray Absorptiometry image of the patient or subject with the database of comparative data sets, with ii) bone mineral density data obtained from the Dual X-ray Absorptiometry image.